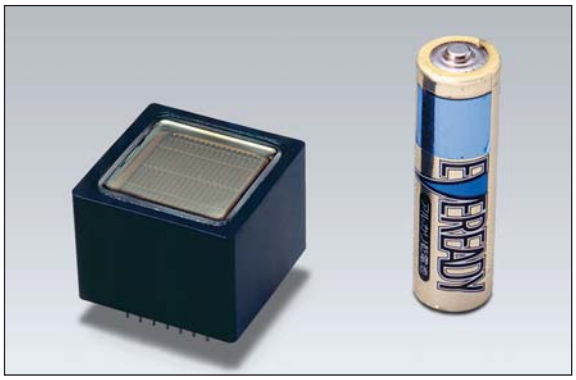
HAMAMATSU

PHOTON IS OUR BUSINESS

MULTIANODE PHOTOMULTIPLIER TUBE R7600U-M4 SERIES

FEATURES

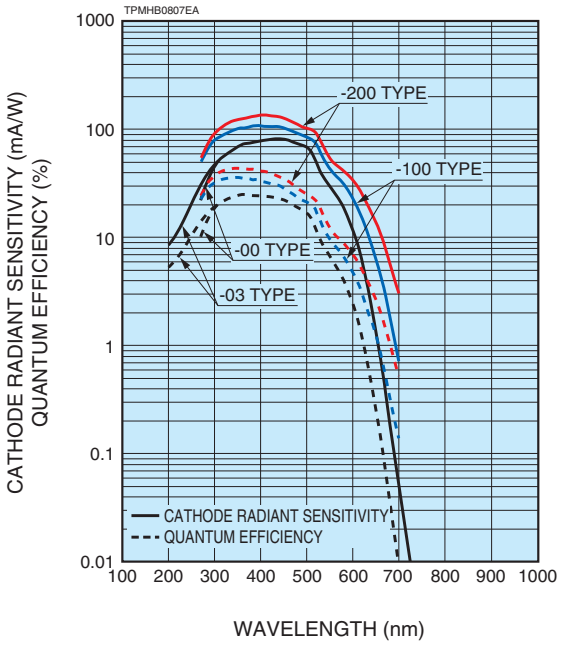
- 2 × 2 Multianode, Anode size: 9 mm × 9 mm / Anode
- Effective area: 18 mm × 18 mm
- High cathode sensitivity
  - Luminous 200 µA/lm Typ. (-01 type)
  - Luminous 500 µA/lm Typ. (-20 type)
- High speed response
- Low Cross-talk: 2 % Typ.

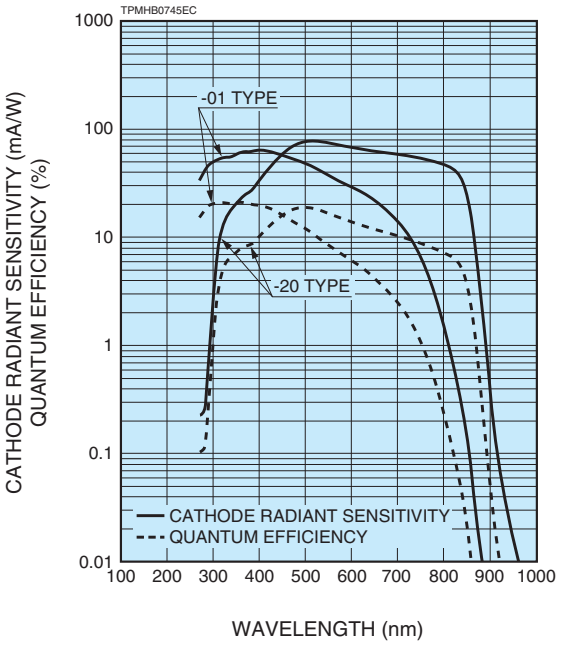


APPLICATIONS

- High energy physics
- Scintillation counting
- Flow cytometer (-01, -20 type)
- DNA sequencer (-01, -20 type)

Figure 1: Typical spectral response





MULTIANODE PHOTOMULTIPLIER TUBE
R7600U-M4 SERIES

Type No.	Spectral response		Ⓐ	Ⓑ	Ⓒ	Maximum ratings		Cathode characteristics						Anode to cathode supply voltage
								Luminous		Blue sensitivity index (CS 5-58)		Red/ White ratio (R-68)	Radiant	
	Range	Peak wavelength	Photo-cathode material	Window Material	Dynode structure / Stages	Supply voltage between anode and cathode	Average anode output current in total	Min.	Typ.	Min.	Typ.	Typ.	Typ.	
	(nm)	(nm)				(V)	(mA)	(μA/lm)	(μA/lm)				(mA/W)	(V)
R7600U-00-M4	300 to 650	420	BA	K	MC/10	900	0.1	60	80	7.5	9.5	—	80	800
R7600U-01-M4	300 to 850	400	MA	K	MC/10	900	0.1	150	200	—	—	0.2	65	800
R7600U-03-M4	185 to 650	420	BA	U	MC/10	900	0.1	60	80	7.5	9.5	—	80	800
R7600U-20-M4	300 to 920	530	ERMA	K	MC/10	900	0.1	350	500	—	—	0.4	78	800
R7600U-100-M4	300 to 650	400	SBA	K	MC/10	900	0.1	90	105	12.5	13.5	—	110	800
R7600U-200-M4	300 to 650	400	UBA	K	MC/10	900	0.1	110	135	14.0	15.5	—	130	800

NOTE: Ⓐ BA: Bialkali, MA: Multialkali, SBA: Super Bialkali, UBA: Ultra Bialkali, ERMA: Extended Red Multialkali
Ⓑ K: Borosilicate glass, U: UV glass
Ⓒ MC: Metal channel

Figure 2: Typical gain

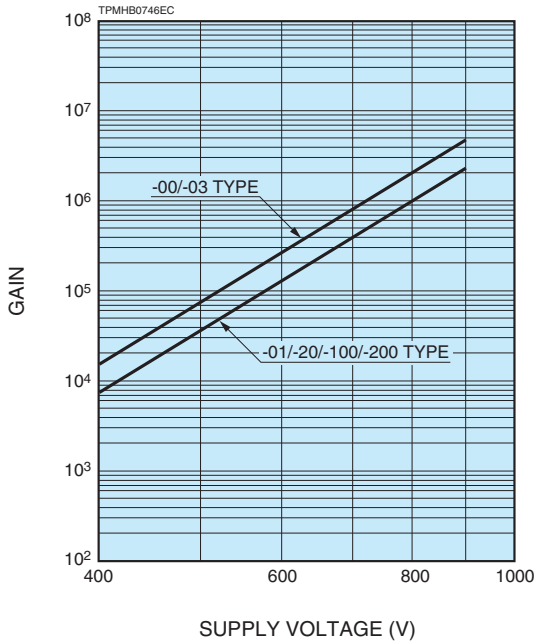


Figure 3: Time response (Example)

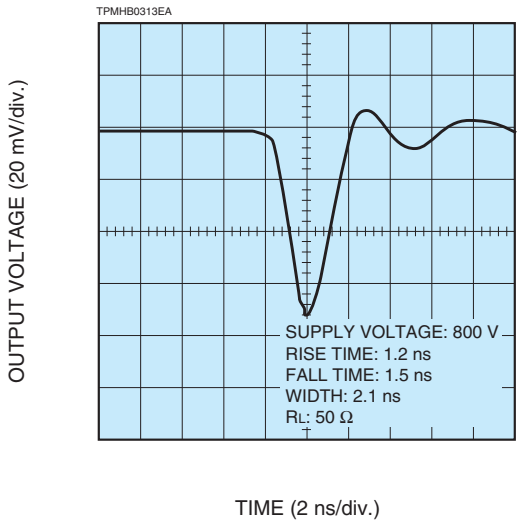


Figure 4: T.T.S. characteristic (Example)

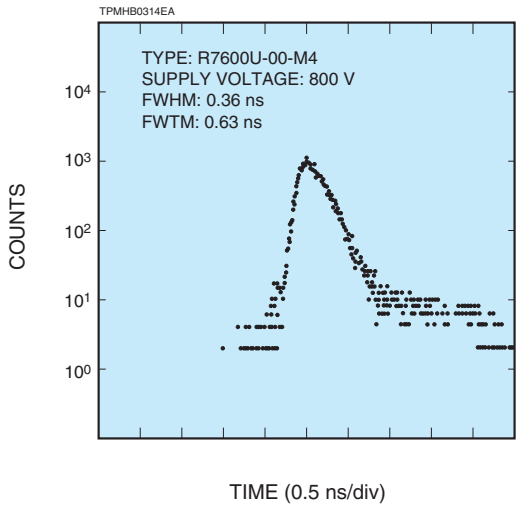
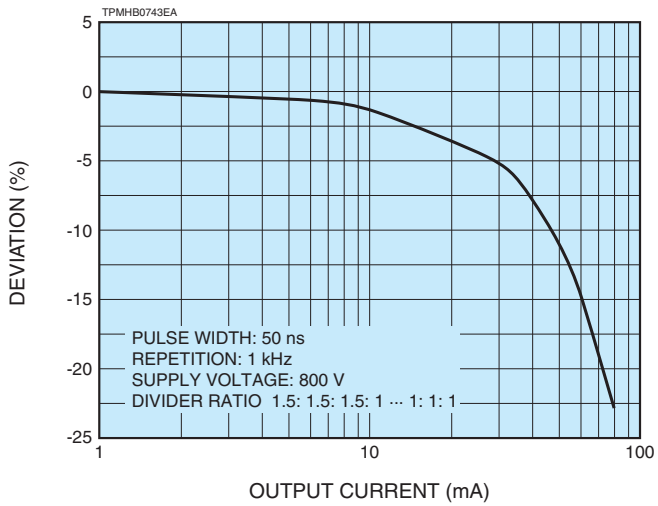


Figure 5: Pulse linearity per channel (Example)



Anode characteristics											Pulse linearity per channel		Cross-talk	Uniformity between each anode		Operating ambient temperature	Storage temperature	Type No.
Luminous		Gain	Dark current per channel (After 30 min)		Time response													
Min. (A/lm)	Typ. (A/lm)	Typ.	Typ. (nA)	Max. (nA)	Rise time Typ. (ns)	Transit time Typ. (ns)	T.T.S. Typ. (ns)				2 % deviation (mA)	5 % deviation (mA)		Typ.	Max.	(°C)	(°C)	
25	140	1.8×10^6	0.5	5	1.2	9.5	0.36				10	30	2	1: 1.5	1: 3	-30 to +50	-30 to +50	R7600U-00-M4
50	200	1.0×10^6	2.5	12.5										1: 2				R7600U-01-M4
25	140	1.8×10^6	0.5	5										1: 1.5				R7600U-03-M4
100	500	1.0×10^6	2.5	12.5										1: 2				R7600U-20-M4
25	140	1.3×10^6	0.5	5										1: 1.5				R7600U-100-M4
25	175	1.3×10^6	0.5	5										1: 1.5				R7600U-200-M4

VOLTAGE DISTRIBUTION RATIO AND SUPPLY VOLTAGE

Electrodes	K	Dy1	Dy2	Dy3	Dy4	Dy5	Dy6	Dy7	Dy8	Dy9	Dy10	P
Ratio	1.5	1.5	1.5	1	1	1	1	1	1	1	1	

Supply voltage: 800 V, K: Cathode, Dy: Dynode, P: Anode

Figure 6: Anode uniformity (Example)

82	95
97	100

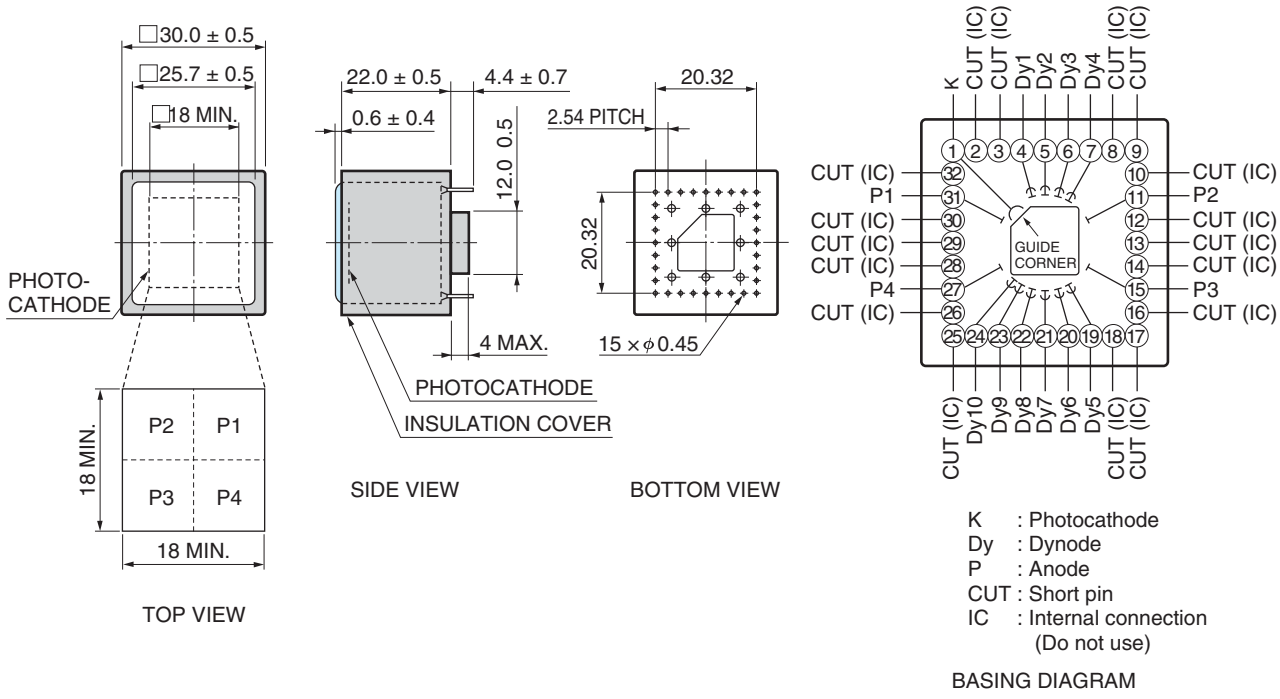
Supply voltage: -800 V
Light source: Lamp (uniform DC light)
Wavelength: 400 nm
Full illumination

Figure 7: Anode cross-talk (Example)

0.1	0.9
1.3	100

Supply voltage: -800 V
Light source: Lamp (uniform DC light)
Wavelength: 400 nm
Spot illumination: 9 mm × 9 mm

Figure 8: Dimensional outline and basing diagram (Unit: mm)

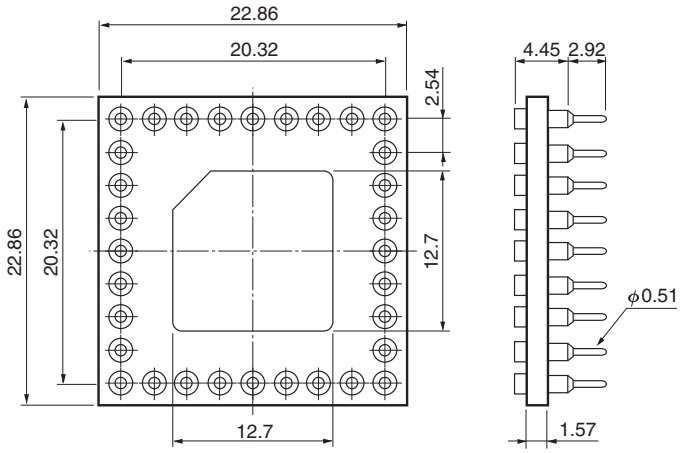


K : Photocathode
Dy : Dynode
P : Anode
CUT : Short pin
IC : Internal connection (Do not use)

BASING DIAGRAM

[ACCESSORIES] (Unit: mm) SOLD SEPARATELY

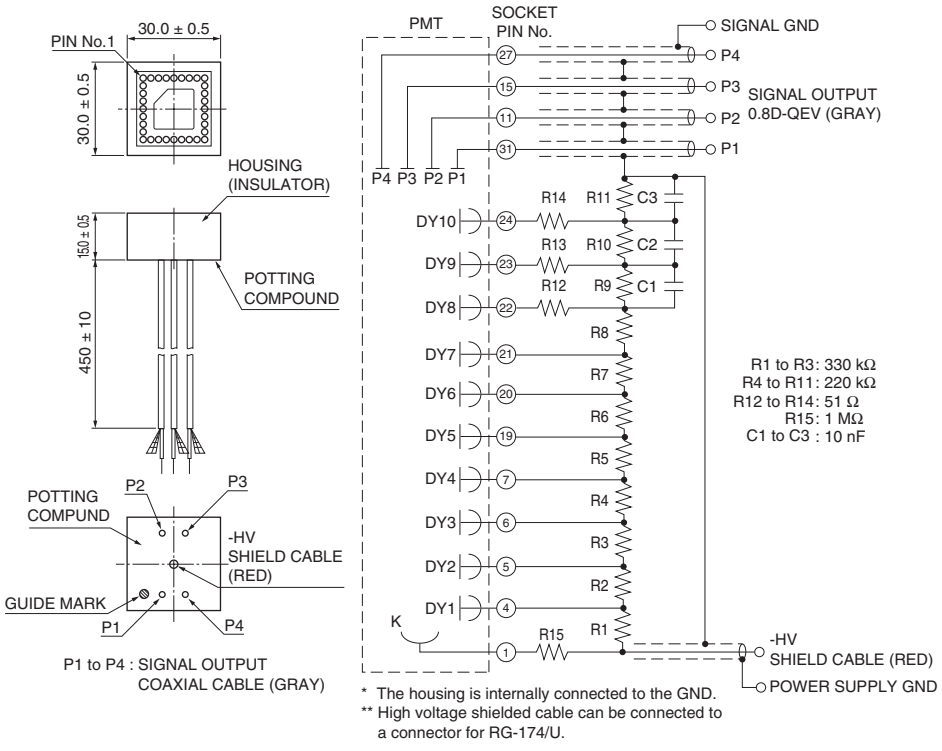
● Socket assembly E678-32B



MATERIAL: GLASS EPOXY

TACCA0094ED

● D type socket assembly E7083



* The housing is internally connected to the GND.
** High voltage shielded cable can be connected to a connector for RG-174/U.

* For a stable operation, all of anodes should be connected to ground potential through load resistors such as 100 k ohm or so, even if they are not used.

TACCA0162ED

⚠ WARNING ~ High Voltage ~

The product is operated at high voltage potential. Further, the metal housing of the product is connected to the photocathode (potential) so that it becomes a high voltage potential when the product is operated at a negative high voltage (anode grounded). Accordingly, extreme safety care must be taken for the electrical shock hazard to the operator or the damage to the other instruments.

* PATENT: USA: 5410211 and other(9), GBR: 551767 and other(9), DEU: 69209809 and other(9), FRA: 551767 and other(9), JPN: 3078905 and other(9)

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